

## Orthorexia nervosa

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### Abstract

Orthorexia nervosa is an eating disorder characterized by an obsessive focus on "healthy" eating, and inflexibility in diet, which leads to clinically significant medical or psychosocial impairment. This review describes the clinical features and management of orthorexia nervosa. Focusing on the endocrine aspects of the syndrome, it explores the multiple bidirectional links between endocrinopathy and orthorexia, as well as endocrine management and orthorexia.

**Keywords:** Anorexia nervosa, Bulimia nervosa, Diabetes, Eating disorders, Obesity, Type 1 Diabetes, Type 2 diabetes, Medical nutrition therapy.

### Introduction

Eating disorders are defined as disorders that are "characterized by persistent disturbance of eating or eating-related behaviour that results in the altered consumption or absorption of food and that significantly impairs health or psychosocial functioning".<sup>1</sup>

Orthorexia nervosa is a relatively recently identified eating disorder, coined by Bratman in 1997.<sup>2</sup> The term, created from the Greek words *orthos* (correct) and *orexis* (appetite), describes persons whose focus on "healthy" diets leads to malnutrition and impairment of health.

### Definition

Orthorexia nervosa has been defined as an "obsessive focus on dietary practices believed to promote optimum well-being through healthy eating (with inflexible dietary rules, recurrent and persistent preoccupations related to food, compulsive behaviours), with "consequent, clinically significant, impairment (e.g. medical or psychological complications, great distress, and/or impairment in important areas of functioning)".<sup>3</sup>

Persons with orthorexia exclude foods that they consider unhealthy. An excessive obsession with sources of foodstuffs, the methods used in growing agricultural produce or manufacturing processed food, and data

mentioned on food labels, are characteristics of orthorexia nervosa.<sup>4</sup> This attitude leads to impaired social behaviour and social relationships, and can impact physical life. The term 'pathologically healthy eating' has also been used to define orthorexia nervosa.<sup>5</sup>

### Epidemiology

The presence of orthorexia is clearly felt in the endocrine and metabolic clinic. A Turkish study suggested a prevalence of 15.5% in male and 11.1% in female persons with diabetes. The risk of orthorexia was not related to duration of diabetes, body mass index or educational status.<sup>6</sup> Other studies, however, have reported a higher incidence in obese persons.<sup>7,8</sup> The problem of orthorexia and related disorders is likely to increase in coming times, due to the wide and rapid dissemination of health related mis-information on various social media platforms. This calls in for a quinary prevention to curb such often encountered information.

### Diagnosis

Orthorexia nervosa can be diagnosed by validated questionnaires. At least six tools are available; these include Bratman's Orthorexia Test (BOT), ORTO-15, Eating Habits Questionnaire (EHQ), Dusseldorf Orthorexia Scale (DOS), Barcelona Orthorexia Scale (BOS) and Teruel Orthorexia Scale (TOS).<sup>3</sup> Ortho-10 has also been used to screen for orthorexia.<sup>3,9</sup>

### Differential Diagnosis

Orthorexia nervosa must be differentiated from healthy orthorexia, which is a "healthy interest in diet, healthy behaviour with regard to diet, and eating healthily as part of one's identity". Orthorexia nervosa has not been included as a diagnostic label in the Diagnostic and Statistical Manual V, or in the International Classification of Diseases-10. In many ways, however, the condition overlaps that of anorexia nervosa and ARFID (avoidant/restrictive food intake disorder). The main difference, though, lies in the underlying motivation for altered food intake.<sup>10,11</sup> There is also a distinct social stigma attached to this condition.<sup>12</sup>

### Endocrine Etiopathogenesis

Orthorexia nervosa has a bidirectional relationship with endocrine and metabolic disease. On one hand,

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orthorexia nervosa may potentially lead to malnutrition<sup>13,14</sup> and associated endocrine diseases. Macronutrient and micronutrient deficiency may predispose to hypothalamo-pituitary, gonadal and thyroid dysfunction. These clinical presentations may be similar to those seen in anorexia nervosa.<sup>15,16</sup> Vitamin D deficiency, manifesting as osteomalacia or rickets, may be precipitated by orthorexia. Glycaemic variability or brittle diabetes can be another feature of orthorexia. In younger individuals, poor nutrition secondary to orthorexia, may also lead to poor attainment of peak bone mass, hypothalamic amenorrhoea and poor pubertal growth and progression.

At the same time, endocrinopathy may precipitate orthorexia nervosa. Loss of appetite, as seen in hypothyroidism, hypopituitarism and Addison's disease, may possibly encourage over-critical assessment and evaluation of foods and food labels, prior to consumption. It is ironical that treatment of orthorexia nervosa may precipitate endocrinopathy as well. The use of newer generation antipsychotics which are used to manage orthorexia, can lead to adverse effects such as weight gain and dysglycaemia.<sup>17</sup>

Management of endocrine diseases has an orthorexic potential as well. Misplaced efforts at weight loss, in persons with obesity, polycystic ovary syndrome, diabetes and hypothalamic obesity, may trigger orthorexia nervosa. This plausible, and frequently encountered complication, is often seen in persons who focus on self-care without seeking expert endocrine opinion.

Paradoxically, orthorexia can have therapeutic potential, too. Orthorexia may develop as a coping mechanism to self limit or manage an endocrine condition such as anorexia nervosa.<sup>18</sup>

**Table:** Association of orthorexia nervosa with endocrinology.

■ Orthorexia nervosa may cause endocrinopathy
◆ Menstrual disturbance
◆ Osteoporosis/osteomalacia
◆ Electrolyte imbalance
■ Management of orthorexia nervosa may cause endocrinopathy
◆ Antipsychotic induced dysmetabolism
■ Orthorexia may be a coping behaviour to self-manage endocrinopathy
◆ Obesity and associated conditions
◆ Anorexia nervosa
■ Endocrinopathy may cause orthorexia nervosa
◆ Hypothalamic dysfunction
◆ Diabetes: altered taste and cognition
■ Management of endocrinopathy may precipitate orthorexia nervosa
◆ Non-supervised weight loss programmes

Some unique variants of orthorexia are frequently encountered in endocrine practice. These include over-zealous avoidance of salt, of cereals, or of carbohydrates, and over consumption of fruits, artificial sweeteners or proteins, in a misinformed effort at healthy eating behaviour.

It must be clarified here that the above discussion is based more upon clinical experience than on evidence. However, the relationships described here are useful in facilitating good clinical practice, with respect to both endocrine care and to eating disorder management (Table).

## Management

Orthorexia nervosa is best prevented before it occurs. Endocrinologists should practice a person-centred approach to obesity management.<sup>19</sup> This implies that the targets and tools for weight loss should be individualized for each patient. Such decisions should be made by both patient and physicians in a shared manner. It should be explained to each person that health is much more than body mass index or weight number. Quinary prevention to curb commonly encountered misinformation about fad diets, rapid weight loss techniques and non-scientifically tested weight losing commercial products will also help to prevent development of orthorexia.<sup>20</sup>

If orthorexia nervosa does occur, early identification and management is the key to limitation of complications. This is done by screening for orthorexia nervosa in high risk patients. This would include all persons living with conditions that require nutritional management, including obesity, diabetes. NASH, PCOS, dyslipidaemia and cardiovascular disease. Screening can be done clinically by using a simple two-item questionnaire,<sup>3</sup> while confirmation of diagnosis may need the use of more elaborate validated instruments.

## Summary

All health care professionals should be aware of the clinical condition termed as orthorexia nervosa. A comprehensive history taking can reveal symptoms suggestive of orthorexia, and help in timely identification and treatment.

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